

CLAIMS

What is claimed is:

- 5           1. A method for carrying out soft handoff of a mobile station from a first base station served by a first wireline subnet to a second base station served by a second wireline subnet, wherein each subnet has a link layer different than the link layer of the wireless network serving the mobile station and the mobile station has initially a first IP address compatible with the first wireline subnet and wherein the first base station is
- 10           served by a nearest router, the method comprising
- storing the first IP address and a shadow address in the nearest router, the shadow address corresponding to the mobile station and having a format compatible with the link layer of the first wireline subnet,
- assigning a second IP address to the mobile station compatible with the
- 15           second wireline subnet,
- communicating the second IP address from the mobile station to nearest router via the first base station, and
- transmitting a frame containing the packet as conveyed by the sending device from the nearest router over the first wireline subnet to the first base station as
- 20           determined by the shadow address and over the second wireline subnet to the second base station based upon the second IP address.
2. The method as recited in claim 1 wherein the storing includes assigning the shadow address by the first base station.

3. The method as recited in claim 2 wherein the transmitting includes communicating the shadow address from the first base station to the sending device in response to an address resolution request by the sending device.

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4. The method as recited in claim 1 further comprising, after the transmitting, concurrently sending the packet from both the first base station and the second base station to the mobile station using a link layer frame compatible with the link layer of the wireless network.

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5. The method as recited in claim 1 wherein the storing includes storing the first IP address and the shadow address for the mobile station as entries in a watch list in the first base station.

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6. The method as recited in claim 1 further comprising, prior to the communicating, sending the shadow address from the first base station to the mobile station and storing the shadow address in the mobile station.

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7. A method for carrying out soft handoff of a mobile station from a first base station served by a first wireline subnet to a second base station served by a second wireline subnet, wherein each subnet has a link layer different than the link layer of the wireless network serving the mobile station and the mobile station has initially a first IP address compatible with the first wireline subnet, the method comprising

assigning a shadow address to the mobile station, the shadow address corresponding to the mobile station and having a format compatible with the link layer of the first wireline subnet,

identifying a nearest router serving the first base station,

5 storing the first IP address and the shadow address of the mobile station in the nearest router,

assigning a second IP address to the mobile station compatible with the second wireline subnet,

10 communicating the second IP address from the mobile station to nearest router via the first base station, and

transmitting a frame containing the packet as conveyed by the sending device from the nearest router over the first wireline subnet to the first base station as determined by the shadow address and over the second wireline subnet to the second base station based upon the second IP address.

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8. The method as recited in claim 7 wherein the transmitting includes communicating the shadow address from the first base station to the sending device in response to an address resolution request by the sending device.

20 9. The method as recited in claim 7 further comprising, after the transmitting, concurrently sending the packet from both the first base station and the second base station to the mobile station using a link layer frame compatible with the link layer of the wireless network.

10. A method for carrying out IP layer soft handoff of a mobile station from a first base station served by a first wireline subnet to a second base station served by a second wireline, wherein each subnet has a link layer different than the link layer of the wireless network serving the mobile station and the mobile station has initially a first IP address compatible with the first wireline subnet, the method comprising

identifying a nearest router serving the first base station,

assigning a shadow address to a mobile station by the first base station, the

shadow address having the same format as the link layer address of the first wireline subnet,

storing the shadow address and the first IP address in the nearest router,

associating the mobile station with the second base station including the assignment of a second IP address to the mobile station,

communicating the second IP address from the mobile station to nearest router via the first base station for storage,

transmitting a frame containing the packet as conveyed by the sending device from the nearest router over the first wireline subnet to the first base station as determined by the shadow address and over the second wireline subnet to the second base station based upon the second IP address, and

propagating the packet from the first base station to the mobile station using the IP layer of the wireless network, and concurrently propagating the packet from the second base station using the IP layer of the wireless network.

11. The method as recited in claim 10 wherein the sending device sends an address resolution request including the first IP layer address of the mobile station and further including looking up the shadow address corresponding to the first IP layer address as stored in the nearest router and sending the shadow address in response to the address resolution request.

12. The method as recited in claim 10 wherein the propagating the packet from the first base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the first base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel coupling the first base station with the mobile station.

13. The method as recited in claim 10 wherein the propagating the packet from the second base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the second base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel coupling the second base station with the mobile station.

14. The method as recited in claim 10 wherein the propagating the packet from the first base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the first base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel

coupling the first base station with the mobile station, and wherein the propagating the packet from the second base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the second base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel coupling the second base station with the mobile station.

15. A system for carrying out soft handoff of a mobile station from a first base station served by a first wireline subnet to a second base station served by a second wireline subnet, wherein each subnet has a link layer different than the link layer of the wireless network serving the mobile station and the mobile station has initially a first IP address compatible with the first wireline subnet, and wherein the first base station is served by a nearest router, the system comprising

a storage device for storing the first IP address and a shadow address in the nearest router, the shadow address corresponding to the mobile station and having a format compatible with the link layer of the first wireline subnet,

a processor for assigning a second IP address to the mobile station compatible with the second wireline subnet,

a sending device for communicating the second IP address from the mobile station to nearest router via the first base station, and

a transmitter for transmitting a frame containing the packet as conveyed by the sending device from the nearest router over the first wireline subnet to the first base station as determined by the shadow address and over the second wireline subnet to the second base station based upon the second IP address.